Posttraumatic Stress Disorder Associated With Peacekeeping Duty in Somalia for U.S. Military Personnel

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Objective: *The end of the Cold War has marked a period when the U.S. military is asked to secure peace under conditions in which peace is tenuous, yet the need for resolution of the conflict is great. Combat-trained soldiers are highly visible and are exposed to threats to their lives, yet are asked to exhibit restraint and neutrality. The psychiatric consequences of peacekeeping duty under these conflicting and volatile conditions have been underresearched. The authors examined the prevalence of posttraumatic stress disorder (PTSD) associated with exposure to peacekeeping duty in Somalia.* *Method:* *A large cohort of active duty personnel deployed to Somalia (N=3,461) were surveyed approximately 5 months after their return to the United States. A variety of military service characteristics and exposure variables and PTSD symptoms were examined.* *Results:* *Eight percent of peacekeepers were found to meet diagnostic criteria for PTSD. PTSD symptom severity was best predicted by the rewards of military service, war zone stress, and frustrations with peacekeeping (e.g., restrictive rules of engagement).* *Conclusions:* *It is likely that the mission in Somalia represents a new paradigm of dangerous military operations for the United States. These data suggest that peacekeeping may be difficult to reconcile for some combat-trained soldiers and can create a risk for PTSD.*

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As the role of the military in the post-Cold War world is further shaped and defined, members of U.S. military and various multinational forces will likely be called on to participate in peacekeeping or to provide humanitarian assistance in war-torn or disaster-ridden regions of the world (1, 2). Although the military has historically participated in United Nations (U.N.) mandated peacekeeping operations (e.g., the Sinai), the nature of peacekeeping duty has evolved in ways suggesting that today's participants are faced with a new set of psychological challenges. The role of the military in peacekeeping operations has traditionally been that of an impartial presence overseeing the implementation of a peace accord between formerly warring parties (3). Recently, however, the need for peacekeeping intervention has emerged under conditions in which the peace between warring parties is tenuous or nonexistent, yet the need for humanitarian intervention and resolution of the conflict is great. A salient example of a mission in which military personnel were called on to provide humanitarian relief in an unsafe and unstable context was Operation Restore Hope (later designated Operation Continue Hope) in Somalia. The present study was designed to explore the unique stressors and posttraumatic stress disorder (PTSD) associated with deployment of U.S. military personnel to the peacekeeping mission in Somalia.

There is very little known about the demands placed on military personnel assigned peacekeeping responsibilities under conditions of life threat. Further, not much is known about the lasting impact of such experiences on the men and women who serve in such operations. Most of the research to date has explored the adaptation of military personnel who take part in more traditional peacekeeping duties (e.g., observer missions). Previous research has indicated that peacekeeping under conditions in which there is established peace (e.g., Sinai) is associated with frustration, boredom, and role conflict, particularly for those soldiers specifically trained for active combat duty (4, 5), but not with the development of lasting stress reactions or psychopa-

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thology (6). In contrast, when there are chronic breakdowns in peace and ongoing life threat to peacekeepers, military personnel are more likely to experience more severe adjustment difficulties that resemble those associated with traditional war zone exposure, such as PTSD (7).

The mission in Somalia may have put military personnel at risk for the development of PTSD. In brief, U.S. troops arrived in Somalia as part of a humanitarian response to the clan warfare-induced starvation and death of approximately 300,000 Somalis. At that time, Somalia was one of the most disease-ridden areas in the world, and it was one of the most disorganized and unstructured societies in Africa (8). Although peacekeepers performed their duties amidst ongoing fighting between clans, with periodic and unpredictable life threat to themselves, strict rules of engagement sharply restricted their options for protection or retaliation. Moreover, unlike U.S. soldiers, during the first phase of the mission in Somalia, other U.N. forces were given different rules of engagement, leading to confusion and an incendiary atmosphere (9). During the last phase of the mission in Somalia there was a sharp increase in offensive engagements with Somali clansmen and a decrease in U.S. domestic support for the mission. In addition, the types of defensive military structures that are commonplace in war were not as accessible in Somalia because of the need for close proximity to the recipients of humanitarian assistance. This emphasis on proximity rather than protection may have contributed to a general sense of fear in soldiers trained for combat.

There were two major goals in the present study. Our primary goal was to establish an estimate of the prevalence of PTSD in U.S. military personnel exposed to peacekeeping duties. The second goal was to catalog various positive and negative experiences in Somalia and examine how specific types of circumstances were associated with risk for PTSD. Although it has become axiomatic that protracted exposure to war zone stressors is associated with the greatest risk for PTSD (10–12), recent studies have shown that a percentage of the variance in the severity of PTSD can be attributed to a variety of military-related stressors beyond traditionally defined combat exposure (13, 14). For example, what have been referred to as "low-magnitude" military-related stressors (e.g., poor diet, exposure to the elements, sleep disruptions) have been shown to independently contribute to risk for PTSD in Vietnam veterans (15). Recent research has further led to a partitioning of military-related stressors to include such variables as prolonged expectation of life threat due to anticipated chemical weapon or missile attack and noncombat stressors such as accidents or sexual harassment (14, 16). Since the mission in Somalia was characterized by an amalgam of traditional combat events (e.g., firefights), peacekeeping duty under dangerous and conflictual conditions (e.g., witnessing interclan violence, receiving threatening responses while administering humanitarian aid), and a variety of low-magnitude stressors (e.g., threat of disease), it permitted further expansion of the definition of stressors and outcomes associated with a new paradigm in military operations. We expected that the development of PTSD from peacekeeping duty would be associated with traditional war zone threats and the uniquely frustrating demands and constraints of peacekeeping and peace enforcement (e.g., restraint from the use of force [7]).

There were two primary demographic characteristics that we were also interested in studying: race and gender. Since it may have been particularly difficult for African American soldiers to reconcile receiving hostile or threatening reactions from native Africans, we pay particular attention to race in the analysis of the perception of stressors as well as the report of PTSD symptoms. In addition, since there is some recent suggestive evidence that women report greater symptoms after exposure to military stressors than men (14), we also report on how gender influenced both the appraisal of peacekeeping-related stressors and outcome.

Finally, while peacekeeping can be stressful, it can also be quite rewarding for some. This may have been especially true in Somalia, where the provision of medical and food supplies was a great success (8). Soldiers may also feel rewarded by the shared experience and sense of purpose that arises from being part of a cohesive and organized military structure (2). Since each of these factors may mitigate the potentially traumatizing effects of exposure to the negative elements of peacekeeping, we also explored their association with PTSD.

METHOD

Participants and Procedure

We surveyed a cohort of active duty military personnel by using a multidimensional instrument that consisted of a variety of subscales designed to measure demographic, exposure, and outcome variables. Permission was obtained to survey whole units of military personnel from several military installations that supplied troops for the mission in Somalia. Soldiers filled out the survey in groups, under standardized conditions, in large auditoriums or smaller classrooms. The survey took approximately 45 minutes to complete.

Military units were made available to the research team by commanding officers. A research coordinator provided instructions, answered any questions, and obtained written informed consent. Although completing the survey was in no way mandatory, there were no refusals that we could account for; that is, all soldiers who attended a given testing session consented to participate in the study. (An undetermined number of soldiers may have opted not to attend a research meeting.) A total of 3,085 male and 225 female soldiers completed the survey. (There were missing data on gender for 151 subjects.) On average, the survey was completed 19.6 weeks (SD=7.5, range=62) after participants had returned to the United States. The units that comprised the overall study group had a diverse array of duties in Somalia, ranging from direct offensive engagement, to combat support, to service support. The demographic and military service characteristics of the study group were comparable to those of the total population of personnel who served in Somalia (17) (tables 1 and 2). The mean ages of the study group and the total population of personnel were 26.0 (SD=5.9) and 27.0 years, respectively. Mean education for the study group was 12.7 years (SD=1.4); 85% of the total population of personnel were at least high school graduates. Mean length of time in the military for the two groups was 67.4 and 61.5 months; mean length of time in Somalia was 14.8 and 7.1 weeks.

TABLE 1. Demographic Characteristics of a Group (N=3,461) and the Entire Population of U.S. Military Personnel Who Served in Somalia

Characteristic	Percent of Subjects	
	Study Group[a]	Population of Somalia Veterans
Gender		
Male	89	90
Female	7	10
Race/ethnicity		
Caucasian	62	60
African American	21	30
Latino	8	5[b]
All other	8	5
Religious affiliation		
Protestant	32	—
Catholic	29	—
Jewish	1	—
Moslem	1	—
Buddhist	1	—
None	8	—
Marital status		
Married or engaged	54	52
Single	39	48
Divorced or separated	6	—
Living situation before deployment		
On base	52	—
With spouse and children	37	—
Alone	4	—
Other (relatives, friends)	6	—

[a]Percent of subjects varies because of missing data.
[b]Defined only as Hispanic.

Survey Measures

Exposure measures. Since there were no established and standardized scales that could be applied to measure various types of experiences and responses specific to peacekeeping duty, a set of items was rationally derived into a number of subscales designed to capture participants' appraisal of potentially positive and negative aspects of participating in the mission in Somalia. Items were generated from debriefing interviews conducted by members of our research team with groups of military personnel returning from Somalia and from various news media depictions of the nature of the deployment to Somalia. A panel of experts from the Department of Veterans Affairs generated additional items reflecting the positive or rewarding aspects of military duty and low-magnitude stressors. Items were constructed to fit into the following categories: positive military, positive humanitarian duty, low-magnitude stressors, negative peacekeeping, and traditional war zone exposure (18). To streamline the survey, the response format combined subjects' ratings of the frequency of exposure to various events (e.g., "bringing food to people who were starving and/or dying") with their subjective appraisal of the event (i.e., how negative or positive the events were for the individual); this was done for all subscale items except the war zone exposure scale, which had subjects exclusively rate the frequency of their exposure.

Positive military subscale. This subscale consisted of 11 items that assessed the extent to which participants experienced serving in the overseas military mission as rewarding or positive; a 5-point Likert-type scale was used (0=not at all positive, 4=extremely positive). The subscale included items that assess positive experiences associated with the general experience of serving in a military operation (e.g., visiting a new country, developing relationships with other military personnel), rather than items specific to a peacekeeping mission. The alpha (Cronbach) value for this subscale was 0.78.

Positive humanitarian subscale. This subscale consisted of five items (each rated on a 5-point Likert-type scale; 0=not at all positive, 4=extremely positive) that evaluated the extent to which participants found activities related to their humanitarian duties to be positive or rewarding. Sample items included bringing food to people who were starving and having contact with Somali children. The alpha value for this scale was 0.76.

Low-magnitude stressor subscale. This subscale comprised 10 items tapping low-magnitude stressor events associated with being in the military or the malevolence of the environment in Somalia (each rated on a 5-point Likert-type scale; 0=not at all frustrating or difficult, 4=extremely frustrating or difficult). Sample items included enduring the climate, the danger of contracting disease, and being separated from family. The alpha value for this subscale was 0.81.

Negative peacekeeping subscale. This subscale consisted of 10 items designed to assess the extent to which participants found the peace enforcement nature of the mission in Somalia difficult or frustrating (each rated on a 5-point Likert-type scale; 0=not at all frustrating or difficult, 4=extremely frustrating or difficult). Sample items included having to exercise restraint while patrolling dangerous areas and dealing with changing rules regarding the discretionary use of force (9). The alpha value for this subscale was 0.82.

War zone exposure subscale. The survey also included a 6-item subscale measuring the frequency of exposure to war zone-related experiences such as going on dangerous patrols and receiving small arms fire. This subscale was directly adapted from the Combat Exposure Scale (19). The following is an example of an item from this subscale: "About how many times did you go on patrols or have other very dangerous duty?" The alpha value for the adapted version of the scale was 0.75.

PTSD measures. In order to reduce monomethod bias, we incorporated two separate measures of PTSD into the survey, the PTSD Checklist (20) and the Mississippi Scale for Combat-Related Posttraumatic Stress Disorder (21). The PTSD Checklist is a 17-item measure that evaluates the severity of each DSM-IV symptom of PTSD. The PTSD Checklist was modified so that participants could report the severity of symptoms specifically in reference to their Somalia experience (e.g., "To what extent have you been bothered by repeated, disturbing memories of your Somalia experiences?"). The PTSD Checklist has been found to have very good psychometric properties (20). The Mississippi Scale for Combat-Related Posttraumatic Stress Disorder is a 35-item test that evaluates the frequency of PTSD symptoms and associated features on 5-point Likert-type scales especially adapted to index Somalia experiences. The scale has been shown to have excellent psychometric properties (22). Subjects rated the severity of their symptoms over the last month.

Utility Analysis

A utility analysis was undertaken to derive an optimally efficient cut score that would index PTSD caseness on the basis of the two PTSD measures used in the Somalia survey. A clinical psychologist with 10 years of experience in the area of PTSD interviewed a subgroup of 33 Somalia veterans. The PTSD criterion interview adopted for the utility study was the Clinician-Administered PTSD Scale (23, 24). Subjects were selected on the basis of their willingness to fill out a Somalia survey and whether they could report a DSM-IV criterion A event. A PTSD symptom was considered positive if it was endorsed at a frequency of at least 1 and an intensity of at least 2 on the Clinician-Administered PTSD Scale. PTSD cases were identified through use of the DSM-IV criteria.

Following guidelines outlined by Kraemer (25), we employed signal detection methods to determine the optimally efficient cutoff scores on each of the two PTSD measures in the Somalia survey for predicting a Clinician-Administered PTSD Scale diagnosis of PTSD. The utility analysis led us to choose a decision rule for PTSD caseness that was based on a score of 92 or greater on the Mississippi Scale for Combat-Related Posttraumatic Stress Disorder *or* a score of 68 or greater on the PTSD Checklist. This cutoff was chosen because it provided a balance of adequate sensitivity (0.86) and specificity (0.77). The efficiency of the decision rule was 0.79, and the weighted kappa was 0.50 (with 0.0 equal to chance agreement and 1.0 equal to perfect agreement).

Data Analysis

We used paired t tests (two-tailed) to examine differences between scores on the exposure/appraisal variables for the whole study group.

Analysis of variance (ANOVA) procedures were used to explore subgroup differences (i.e., gender, race) on all exposure/appraisal variables. Chi-square analyses were used to analyze the differences in PTSD prevalence rates among subgroups of interest.

We applied a conservative decision rule for statistical significance for all analyses in the study as a safeguard against the risk for type I error. The paired t tests were considered significant only if they exceeded an alpha value of 0.01 (Bonferroni correction). A Bonferroni correction was also employed for the ANOVA examining the influence of gender on the exposure variables (alpha=0.005). The overall ANOVA examining the influence of race on each exposure variable was considered significant only if it exceeded an alpha value of 0.001. A Scheffé post hoc comparison procedure was used to conduct post hoc comparisons among race on each of the exposure variables. A Goodman's simultaneous confidence interval procedure was used to make specific comparisons among races in regard to PTSD prevalence. Given the greater likelihood of obtaining statistically significant but clinically insignificant findings because of the large study group size, we also provide estimates of effect sizes (eta^2, based on the ratio of between groups to total sums of squares).

Finally, we conducted an exploratory simultaneous multiple linear regression analysis in order to examine the separate and combined contributors to variance in PTSD. We used a composite of the two PTSD tests as the dependent measure in the multiple linear regression. The composite PTSD index was computed by calculating the mean of the z scores of the PTSD Checklist and the Mississippi scale. This was done in order to enhance the reliability of the dependent measure. The following were the independent variables employed in the multiple linear regression analysis: race (Caucasian, African American, Latino, and all other; each dummy coded); age, education (in years), gender, prior military duty in a war zone (yes/no), and the five appraisal and exposure subscale scores. Prior duty in a war zone was used to partial out the variance in PTSD symptom severity from the Somalia mission that might be related to prior exposure to potentially traumatizing events.

RESULTS

Characteristics of the Study Group

The demographic characteristics of subjects in our study group and the entire population of soldiers deployed to Somalia are presented in table 1. The military service characteristics of the study group are displayed in table 2. Approximately 17.8% of participants reported that they had previously served during a conflict, the majority in a combat or combat support role. Most of these individuals (85.9%) had served during the Persian Gulf War.

TABLE 2. Military Service Characteristics of a Group (N=3,461) of U.S. Military Personnel Who Served in Somalia

Service Characteristic	Percent of Study Group
Rank[a]	
Private (E-1 to E-3)	26
Corporal	36
Sergeant (all types)	30
Warrant officer (all types)	1
Lieutenant (1st and 2nd)	3
Captain	2
Major or colonel	1
Nature of prior war zone deployment	
Combat	6
Combat support	9
Service-support	4
None	81
Primary location in Somalia	
Mogadishu	66
Kismayu	10
Baledogle	6
Merca	3
Other (or combinations of locations)	15

[a]In terms of rank, 92% of the study sample were sergeant major or below; 94% of the population of Somalia veterans were sergeant major or below.

Exposure/Appraisal of Somalia Duty

Overall study group. The mean exposure and appraisal subscale scores for the study group are presented in table 3. Paired t tests revealed that as a group, participants rated positive aspects of their general military experiences as significantly more rewarding than positive aspects of their humanitarian duties (t=–36.22, df=3437, p=0.0001; eta^2=0.29). In addition, low-magnitude stressors related to the malevolence of the environment in Somalia were rated as more frustrating than negative aspects of peacekeeping (t=15.92, df=3425, p=0.0001; eta^2=0.09).

Gender. As shown in table 3, men reported being exposed significantly more frequently than women to traditional war zone stressors. However, in comparison to men, women reported feeling significantly more adversely affected by both peacekeeping-related stressors and low-magnitude stressors. Women also reported feeling significantly more positive about the humanitarian aspects of their duty. In general, the effect sizes for gender were small. There were no significant differences between men and women in the degree to which they reported feeling positive about the general military atmosphere in Somalia.

Race/ethnicity. A breakdown of the mean exposure/appraisal subscale scores by three ethnic groups (Caucasian, African American, and Latino [defined as any of the following: Cuban American, Mexican American, Puerto Rican, other Hispanic, or Latino]) and the ANOVA results are also presented in table 3. Post hoc (Scheffé) comparisons showed that African Americans had higher ratings on the positive aspects of the humanitarian mission subscale than both Caucasians and Latinos; moreover, Latinos had higher scores than Caucasians. Follow-up comparisons of the low-magnitude stressor subscale revealed that Caucasians had lower ratings than both African Americans and Latinos. In addition, post hoc contrasts of the negative aspects of the peacekeeping subscale showed that Caucasians had lower ratings than both African Americans and Latinos. Finally, comparisons of the war zone exposure subscale revealed significant race differences; Caucasians reported greater exposure to combat-related stressors than both African Americans and Latinos. As was the case for gender, the effect sizes for race were small.

PTSD Prevalence Estimates

The prevalence rate of PTSD for the full study group was 8%. Men and women did not differ in the percent-

TABLE 3. Scores on Five Exposure/Appraisal Subscales for a Group of U.S. Military Personnel Who Served in Somalia and for Gender and

	Comparison for Gender								
	Total (N=3,461)		Men (N=3,085)		Women (N=225)		ANOVA		
Subscale[a]	Mean	SD	Mean	SD	Mean	SD	F	df	eta^2
Positive aspects of military service	2.39	0.64	2.25	0.69	2.15	0.70	4.15	1, 3298	0.01
Positive aspects of humanitarian mission	1.75	1.0	1.72	1.0	1.96	0.94	11.49**	1, 3290	0.003
Low-magnitude stressors	2.32	0.79	2.31	0.79	2.47	0.79	8.15*	1, 3292	0.001
Negative aspects of peacemaking	2.15	0.84	2.12	0.83	2.50	0.81	43.14**	1, 3277	0.01
Exposure to war zone stressors	1.88	0.78	1.90	0.78	1.62	0.74	26.02**	1, 3179	0.01

[a]Number of subjects varies slightly among subscales because of missing data.
*p<0.005. **p<0.0007. ***p<0.0001.

TABLE 4. Predictors of PTSD Symptom Severity Among a Group of Military Personnel Who Served in Somalia (N=3,461)[a]

	PTSD Index			
Predictor	t	p	B	beta
Race dummy variables				
1: African Americans versus Caucasians	3.9	0.0001	0.34	0.07
2: Latinos versus Caucasians	2.5	0.01	0.27	0.04
3: All other races versus Caucasians	4.9	0.0001	0.56	0.08
Age	–2.3	0.02	–0.00	–0.04
Education	–3.5	0.0005	–0.09	–0.06
Gender	1.2	0.25	0.14	0.02
Prior war zone exposure	0.6	0.57	0.05	0.01
Positive aspects of military service	–11.1	0.00001	–0.64	–0.23
Positive aspects of humanitarian mission	–0.6	0.56	–0.03	–0.01
Low-magnitude stressors	2.5	0.01	0.14	0.06
Negative aspects of peacemaking	7.7	0.00001	0.44	0.19
Exposure to war zone stressors	14.9	0.00001	0.63	0.26

[a]Originally, the study group was randomly split into two subgroups (stratified on gender and race) that were one-third and two-thirds the size of the full study group. The identical multiple regression equations were employed on the two-thirds subgroup and then cross-validated on the one-third subgroup. These separate equations yielded the identical set of significant predictors. In order to simplify the reporting of the results, the multiple regression equation reported above is based on the full study group. Several diagnostic factors were used to determine the degree to which collinearity affected the results. The tolerance of each independent variable (ranging from 0.43 to 0.96), as well as the variance inflation factors (ranging from 1.05 to 2.35), was within normal limits. In addition, the condition number for the 12-variable model was 8.93, which is also within normal limits. Model statistics for the PTSD index equation: F=63.43, df=12, 3040, p=0.00001; adjusted R^2=0.21.

age of PTSD cases (men=7.9%, women=8.8%) (χ^2= 0.19, df=1, p=0.66). Although the overall chi-square was significant for race (Caucasians=6.7%, African Americans=9.8%, and Latinos=8.7%) (χ^2=9.18, df=2, p=0.03), the Goodman's simultaneous confidence interval procedure revealed no statistically significant difference between specific races (Caucasians versus African Americans: confidence interval=–0.06 to 0.86, African Americans versus Latinos: confidence interval=–0.46 to 1.02, Caucasians versus Latinos: confidence interval=–0.90 to –0.57).

Multiple Linear Regression Analyses

Table 4 shows the findings from the multiple linear regression. The PTSD index was predicted by race, although to a very small degree. Education negatively predicted PTSD symptom severity but also to a very small degree. However, the positive military subscale, in stark contrast to the positive humanitarian subscale, was a relatively strong negative predictor of PTSD. Furthermore, the intensity of frustration with the negative aspects of peacekeeping and the frequency of war zone stressor events were relatively strong predictors of PTSD.

DISCUSSION

Overall, it appeared that the majority of soldiers we surveyed did not have difficulty coping with or resolving the demands placed on them during their deployment to Somalia. However, as would be expected given the nature of the demands in Somalia, a small but significant percentage of participants appeared to have PTSD following their service there. The PTSD prevalence rate was lower than the prevalence estimate for current PTSD in Vietnam combat veterans (10); yet it was comparable to estimates of the prevalence of PTSD in Persian Gulf veterans (14). However, unlike previous investigations, there were no differences in prevalence rates by gender or race.

In comparison to men, however, women reported less exposure to war zone stressors and felt more positive about the humanitarian aspects of their duty, although more frustrated with the negative aspects of peacekeeping. Although gender differences in exposure and appraisal of the experience in Somalia were small, future researchers may wish to further examine how women uniquely experience frustration with peacekeeping and how that may amplify their overall distress despite less intense exposure to war zone stressors.

As expected, race played a role in the experience of the mission in Somalia, although also to a small degree. African Americans and Latinos reported less exposure

Racial Groups

Comparison for Race								
Caucasian (N=2,040)		African American (N=682)		Latino (N=273)		ANOVA		
Mean	SD	Mean	SD	Mean	SD	F	df	eta^2
2.23	0.67	2.26	0.75	2.36	0.69	4.82	2, 3125	0.001
1.54	0.95	2.26	0.93	1.94	1.00	157.54***	2, 3118	0.10
2.25	0.76	2.52	0.80	2.43	0.81	33.97***	2, 3120	0.02
2.06	0.80	2.37	0.88	2.24	0.83	38.47***	2, 3106	0.02
1.97	0.77	1.63	0.74	1.80	0.82	51.54***	2, 3014	0.03

to war zone stressors than their Caucasian comrades but greater difficulty with both the negative aspects of peacekeeping and low-magnitude stressor events. However, the African American group reported being more rewarded by humanitarian duty than the other two racial groups evaluated. It is important to note that since race is associated with a variety of variables, such as culture and religion, any number of these unmeasured variables could account for our findings (26). It could have been the case that African Americans uniquely identified with Somalis and that this represented a greater challenge for them in that it also led them to be even more frustrated about the negative aspects of their peacekeeping duty.

An examination of the statistical predictors of PTSD symptom severity revealed several unique features of the mission in Somalia that may be responsible for the development of PTSD related to peacekeeping. First, reports of the generic rewards of military service negatively predicted PTSD. The implication of this finding is that the greater the pride a given soldier has in serving his or her country and the greater the experience of group cohesion and confidence in the order and structure of the U.S. military, the greater the likelihood of successful resolution and recovery from stressful peacekeeping types of operations. This is consistent with previous research that has shown group cohesion and morale to be negatively associated with risk for acute stress reactions in battle (27, 28) and during peacekeeping (29).

Second, the best predictors of PTSD symptom severity were the frequency of exposure to war zone stressors and the degree to which various negative aspects of peace enforcement duty were appraised as frustrating. Thus, peacekeeping operations under perilous conditions may represent a unique class of potentially traumatizing experiences not sufficiently captured by traditional descriptors of war zone exposure. To the extent that the experience in Somalia can be generalized to other peacekeeping missions under unstable conditions, the effects of war zone stress in a peacekeeping context may represent the prototype of a new paradigm in military operations. It could be that both war zone exposure and frustration with peace enforcement are most implicated in PTSD responses because of the uncontrollable and unpredictable nature of peacekeeping under unsafe conditions (30, 31).

Third, the rewards of humanitarian duty in Somalia failed to be associated with the soldiers' reports of PTSD symptoms. This may be related to the fact that for the whole study group, the rewards of general military service were higher than those for humanitarian duty in Somalia. It could be the case that when there is any degree of life threat and hostility from the people to whom one is administering humanitarian assistance, any rewards of the latter experience are outweighed by the irreconcilable nature of the former.

There are several methodological limitations in the present study. Since this was a correlational study, there are problems with directionality that potentially affect the interpretations of our findings. It could be the case, for example, that PTSD symptoms served to bias subjects' ratings on exposure/appraisal subscales. For some soldiers, the experience of symptoms at the time of testing may have influenced their recall of what occurred during deployment. Thus, it is premature to make any direct causal link between exposure/appraisal and clinical outcome.

There are also additional unassessed variables that could influence interpretation of the findings in the study. Given that our most robust regression equation predicted only 21% of the variance in PTSD severity, it is likely that a number of unmeasured third variables could help account for residual variance; candidate measures include predeployment psychopathology, predeployment stress, and postdeployment environment (13, 15).

However, when these results are considered in the context of the few other studies on the psychological impact of U.N. peacekeeping operations, they suggest that there are differences between such experiences and traditional war zone exposure. In the case of Somalia, such differences include ambiguous, inconsistent, or unacceptable rules of engagement; lack of clarity about the goals of the mission itself; a civilian population of combatants; and inherently contradictory experiences of the mission as both humanitarian and dangerous. Since U.N. peacekeeping operations are likely to continue, it is essential to appreciate these issues more thoroughly so that we can be better equipped to prepare military personnel before deployment, provide psychological support in the theater of operation, and offer psychological interventions after soldiers return home (e.g., 32).

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